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under the various headings is frequently not what the heading indicates, as, for example, Chapter XII. This fault culminates in the division of the book given to ecology, which is in a remarkably indefinite condition.

It may be that an occasional lapse into poetical style has its place in stimulating interest in the secondary schools, but the reviewer questions whether a sentimental interest should have any connection with scientific training.

The introduction of photographs of typical plant associations is very commendable, but something must be done to make such photographs significant. This criticism has reference not only to the book in hand, but to the general use of such pictures. If ecology is to take the prominent place in elementary botanical education that it deserves, we must have publishers get beyond the dim and hazy landscapes which may be capable of interpretation by the trained ecologist, but which mean little or nothing to the elementary student.

Professor Atkinson's book is one of great interest, and will be a stimulus to proper botanical study in secondary schools. The weak points are such as often appear in the work of a very busy man, who may not lay special stress upon logical presentation and exact statement.—J. M. C.

Bokorny's text-book.⁴

THIS is the latest contribution to the long list of German text-books. It is intended for use in the technical schools and gymnasias, and seeks to present the subject without requiring of the student too great "expenditure of time or effort of memory." To this end a novel approach to the subject is introduced. Thirty-five pages are devoted to the illustrated descriptions of some of the commonest seed plants, the violet, mustard, pear, etc. These descriptions are in the simplest language, and are evidently intended to be taken in connection with laboratory study of the types selected. However remote such an approach may be from a logical presentation of the subject, there is some reason in the plea that the student may be thus gently induced to careful observations, and well oriented in the new field by learning first the technical interpretation of the plants he has always known. The rest of the text suggests an effort to give good place to each of the schools with too great emphasis upon none. It is an exemplification of the extremely various ideas which prevail as to which interpretation of the plant world may best be presented first to the beginner. The author, save for the departure in the first chapters, does not commit himself. The organs of the plant body are taken up in logical sequence in the second part. This would serve equally

⁴ BOKORNY, TH.—Lehrbuch der Botanik. 8vo. pp. vi+226. *figs.* 170. Leipzig: Wilhelm Engelmann. 1898. *M.* 2.40.

well morphology, taxonomy, ecology, physiology, what not. Then a few pages are devoted to minute structure, and a review of forms follows with the highest spermatophytes leading the procession, and in the usual modern proportion of about four pages of spermatophytes to one of the "sporophytes" (the author's word).

The physiology is divided into the chemical and physical processes within, and the "biology," *i. e.*, relations to environment; a separation not without difficulty. Three pages are devoted to "something about plant geography," and a key for identifications completes the work. The text is exceptionally clear, simple, and free from technical phraseology. Most of the illustrations are borrowed from the *Natürlichen Pflanzenfamilien*, which is sufficient commendation.—JOHN G. COULTER.

MINOR NOTICES.

THE WRITINGS of Professor Dr. P. Magnus, of Berlin, include much matter that is of moment to American botanists. Dr. Magnus is a student of fungi, but writes to some extent upon other subjects. His interests are catholic, and he has often contributed to the solution of problems arising in distant quarters of the globe. A number of separates (which he generously sends to all whom he knows to be interested in such subjects) have recently come to hand, and the opportunity is taken to give a brief account of their contents.

In a communication to the *Botanisches Centralblatt*⁵ some criticisms are offered upon the treatment given the Hemibasidii and Uredinales by Dr. Dietel in Engler and Prantl's *Natürliche Pflanzenfamilien*. It is pointed out that the sorus of *Doassansia* is never imbedded in the parenchyma of the host, as stated by Dietel (*l. c.*, p. 21), but always lies immediately beneath and in contact with the epidermis. He reviews the genera *Doassansia* and *Burrillia* and their subgenera as characterized by Setchell, and holds them to be more logical and natural than the arrangement proposed by Dietel. Turning to the Uredineæ he states that *Puccinia Schweinfurthii* Magn. forms witches' brooms, and should not be confounded with *P. Mesneriana* Thüm. or *P. digitata* Ell. & Hark., which never do so, although otherwise much alike. Exception is taken to the establishment of the genus *Phragmopyxis* with a layer around the spores that swells in water, while ignoring Schröter's genus *Uropyxis* with just the same claim to recognition. It is pointed out that aside from this equivocal character, *Uropyxis* possesses good generic characters in the number and position of the teleutosporic pores. The suppression of the genera *Xenodochus* and *Chaonia*, and the grouping of some of the genera are not approved.

⁵ Einige Bemerkungen zu P. Dietel's Bearbeitung der Hemibasidii und Uredinales in Engler-Prantl *Natürliche Pflanzenfamilien* Bd. I.—Bot. Centr. 74: 165-170. 1898.